Building Newsflash

Stormwater and on site drainage design.

Purpose:

The purpose of this newsflash is to offer guidance in relation to stormwater design of Class 1 and Class 10 buildings to designers, architects and building certifiers.

Building certifiers obligations:

Building certifiers have an obligation to inspect and approve the stormwater system in accordance with the National Plumbing and Drainage Code Part 3.2: Stormwater Drainage. It has been brought to the attention of the Department that stormwater design on many approved drawings does not give adequate information to builders and is often not checked by private certifiers. This can result in stormwater overflows, erosion and damage to properties in Queensland.

A simplified step-by-step method is provided to assist building certifiers in assessing the suitability of the stormwater design of class 1 and Class 10 buildings.

Step 1:   Calculate roof area from the plan:

Say 150 sq m

Step 2: Determine total effective roof catchment area by noting the roof pitch:

If roof pitch is: 20º add 18%
                                  25º add 23% and
                                  30º add 29 % to the calculated roof area.

(For further information refer to Fig 3.4, Page 25 AS/NZS 3500.3.2)

Say Pitch is 20º

Total effective roof area: 150 x 1.18   = 177 sq m

Step 3:   Determine 5-minute rainfall intensity for ARI 20 years.

For Brisbane area case 250 mm/h, for other areas refer to AS/NZS 3500.3.2 Appendix E.

Step 4:   Select eaves gutter and gutter slope

Gutter size 125 x 85 mm (rectangular gutter) with effective cross- section area approx 8000 sq mm and gutter slope 1:500 are commonly used.

Size of the eaves gutter: 125 mm x 85 mm

Step 5:   Determine nominal size of vertical downpipe.

From table 5.13 (AS/NZS 3500.3.2) = 100 mm dia or 100x75

Step 6:   Determine allowable maximum catchment areas per downpipe

From Figure 5.30, the allowable maximum catchment per downpipe is 33 sq m .

Step 7:   Minimum numbers of downpipes

177/33=   5.36

Say number of downpipes = 6

Step 8:   Average catchment per downpipe   177/6 = 29.5 sq m

Step 9:   Divide the roof area into approximately equal catchment areas and locate down pipe positions

Check that the actual catchment areas are less than or equal to the allowable maximum catchment per downpipe.

Surface water drainage system:

- **Effective roof area: 177 sq m**
- 5 minute rainfall intensity for ARI 20 years = 250 mm/hr
- Pipe capacity if laid at 1/100:

- for PVC DN 90=   360 L/min (refer to AS 2200)
- DN 100=   450 L/min

Total rainfall intensity: 177 x 250 /60 =   737 L/min

No of surface drainage pipes required for DN 90=   737/360   =   3
and for DN 100   =   737/450   =   2

Surface drainage system must be designed that DN 100 shall not carry more than 450L/min if laid at grade 1/100.

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